



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,348	07/24/2001	Fredrik Persson	66477-012-5	3135
25269	7590	12/22/2003	EXAMINER	
DYKEMA GOSSETT PLLC FRANKLIN SQUARE, THIRD FLOOR WEST 1300 I STREET, NW WASHINGTON, DC 20005			MACARTHUR, VICTOR L	
			ART UNIT	PAPER NUMBER
			3679	

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,348

Applicant(s)

PERSSON ET AL.

Examiner

Victor MacArthur

Art Unit

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 4-8 and 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 3679

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on 12/03/1998. It is noted, however, that a copy of a certified copy of the priority document has not been received.

Claim Rejections - 35 USC § 103

Claim 1-3, 5-8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4976582 to Clavel in view of USPN 4695181 to Rahmede et al.

Regarding claim 1, Clavel discloses (fig.2) an industrial robot including at least one linkage device (5) in which pull rods (5a, 5b) are arranged in a multi-joint system where the joints include three-axle ball and socket joints (26a, 26b, 27a, 27b). Clavel does not expressly disclose that each ball and socket joint has a bearing element and friction-increasing means. Rahmede teaches (fig.8), a three-axle ball and socket joint, comprising a bearing element (21) fixed so that the bearing element does not rotate in a housing (19) in the socket of the joint, the bearing element further includes friction increasing means (deformed portions of 21 as described in col.4, ll.15-25 as they would pertain to fig.8) in the form of grooves (where 21 deforms around 20), the housing including a surface against which the bearing element abuts and the surface being provided with friction-increasing means (20) in the form of complementary grooves

Art Unit: 3679

engagable with the grooves provided on the bearing element to increase friction between the surface and the bearing element. Rahmede teaches (col.1, l.64 – col.4, l.22) that providing a ball and socket joint with a bearing and friction-increasing means compensates for production tolerances and wear, and absorbs shock loads while preventing rotation of the bearing with respect to the housing. Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the robot of Clavel to use ball-and-socket joints with bearing and friction-increasing means, as taught by Rahmede, for the purpose of compensating for production tolerances and wear, and absorbing shock loads.

As to claim 2, Rahmede teaches that the bearing element comprises an annular bearing element (21).

As to claim 3, Rahmede teaches that the friction-increasing means is structured as to penetrate the bearing element effecting a permanent deformation (col.4, ll.9-35).

As to claim 5, Rahmede teaches that the bearing element (21) abuts with the surface and is pressed there against to fit tightly (as best seen in fig.5).

As to claim 6, Rahmede teaches that the grooves, provided on the bearing element and the surface, are oriented **primarily** (but not necessarily completely) parallel with the central axis of the bearing element (as seen in fig.8).

As to claim 7, Rahmede teaches that the bearing element is comprised of an elastic material (col.2, ll.1-10). Rahmede does not disclose that the elastic material is a polymer material. However, a polymer material is within the scope of Rahmede's disclosure. Further, applicant is reminded that it has generally been recognized that selection of a known material based upon its suitability for the intended use is a design consideration within the skill of the art.

Art Unit: 3679

In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). The use of elastic materials that are polymer materials is well known. Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use a polymer material to construct the socket of Rahmede, as such practice is a design consideration within the skill of the art.

As to claim 8, Clavel discloses a robot that appears to be a delta robot. Furthermore, the applicant clearly states that the prior art to Clavel comprises a delta robot, as is stated in lines 17-19 of page 1 of the applicant's specification.

As to claim 12, Clavel, discloses (fig.2) a method comprising the steps of providing at least one linkage device (5) for the robot, the device having pull rods (5a, 5b) arranged in a multi-joint system where the joints (26a, 26b, 27a, 27b) each comprise a three-axle ball and socket joint. Clavel does not expressly disclose that each ball and socket joint has a bearing and friction-increasing means. Rahmede teaches (fig.8), a three-axle ball and socket joint, providing a socket of the joint with a housing (19) to accommodate a bearing element (21), providing the bearing element with friction increasing means (deformed portions of 21 as described in col.4, ll.15-25 as they would pertain to fig.8) in the form of grooves (where 21 deforms around 20), providing the housing with a surface against which the bearing element abuts, fixing the bearing element such that the bearing element does not rotate in the housing, the fixing step being effected by providing the surface with friction-increasing means (20) in the form of complementary grooves engageable with the grooves provided on the bearing element, and engaging the friction increasing means with the bearing element when the bearing element is positioned in place. Rahmede teaches (col.1, l.64 – col.4, l.22) that providing a ball and socket joint with a bearing and friction-increasing means compensates for production tolerances and

• Art Unit: 3679

wear, and absorbs shock loads while preventing rotation the bearing with respect to the housing. Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the robot of Clavel to use ball-and-socket joints with a bearing element and friction-increasing means, as taught by Rahmede, for the purpose of compensating for production tolerances and wear, and absorbing shock loads.

As to claim 13, Rahmede teaches the further step of pressing the bearing element to fit tightly in place (fig.5) in the housing of the joint socket.

As to claim 14, Rahmede teaches the further step of deforming (col.4, ll.9-35) the material of the bearing element by permanent deformation by the friction-increasing means when the bearing element is placed in position.

Response to Arguments

Applicant's arguments filed on 5/6/03 with regard to the claim rejections have been fully considered but they are not persuasive.

The applicant argues that Rahmede “does not teach or suggest providing friction-increasing means, i.e. grooves, on both the bearing and the surface engaged with the bearing”. This is not persuasive since Rahmede teaches (col.4, ll.10-25) that “the inner bearing 21 is deformed into the recesses 22 on the inner bottom 19”. Thus, additionally in view of fig.8, Rahmede teaches grooves (portions of 21 receiving 20, which lie between the deformed portions of 21 mentioned above) on the bearing and grooves (22) on the surface engaged with the bearing. It is further noted that this limitation was added by amendment and was not present in the claims as originally rejected

• Art Unit: 3679

The applicant argues that Rahmede “lacks any such teaching or suggestion of parallel grooves”. This is not persuasive since it is noted that the limitation “parallel grooves” is not recited in the claims as originally rejected or amended. What is present is the limitation “primarily parallel grooves”. The word “primarily” is taken by the examiner to mean “for the most part” in accordance with Merriam-Webster’s Collegiate Dictionary Tenth Edition. Therefore the grooves (22 and the portions of 21 receiving 20), as depicted in fig.8 of Rahmede, meet this limitation since they are closer to parallel than perpendicular and thus are “for the most part” parallel within the broadest reasonable interpretation of the claim language.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

• Art Unit: 3679

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor MacArthur whose telephone number is (703) 305-5701.

The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (703) 308-1159. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.



VLM

December 9, 2003



Lynne H. Browne
Supervisory Patent Examiner
Technology Center 3600